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EXAMINER

GEBREMARIAM, SAMUEL A

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/623,965

Applicant(s)

MA ET AL.

Examiner

Samuel A Gebremariam

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 16-18 recite the limitation "active surface". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 14-15, 19, 23 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Barron et al., US patent No. 5,919,548.

Regarding claim 14, Barron teaches (figs. 3a-3r) a process of forming a micro electromechanical (MEMS) package (col. 11, lines 46-53) comprising: providing a semiconductor device (10, 300); providing a conveyance (24) with at least one embedded MEMS device (20) disposed therein; and disposing the conveyance over the semiconductor device, wherein the at least one embedded MEMS device communicates electrically to the semiconductor device (region 20 communicates with regions 302 and 304).

Regarding claim 15, Barron teaches the entire claimed structure of claim 14 above including the at least one embedded MEMS device is a capacitor (col. 6, lines 24-27).

Regarding claim 16, Barron teaches the entire claimed structure of claim 14 above including the conveyance comprises a via (32) disposed therein the process further comprising: providing at least one detached MEMS (38) device in a first structure; and accommodating the at least one detached MEMS device through the via, upon the active surface of the device.

Regarding claim 17, Barron teaches the entire claimed structure of claim 14 above including the conveyance comprises a via (32) disposed therein the process further comprising: providing at least one detached MEMS (38) device in a first structure; placing the at least one detached MEMS device on the semiconductor device (10, 300); and accommodating the at least one detached MEMS device through the via upon the active surface of the device (see fig. 3j-3l).

Regarding claims 19 and 20, Barron teaches the entire claimed structure of claim 14, 16 and 17 above including forming an integrated package comprising the semiconductor device and the conveyance (col. 11, lines 46-53).

Regarding claims 21 and 22, Barron teaches the entire claimed structure of claim 14, 16 and 17 above including encapsulating the detached MEMS device and the conveyance to form an integrated package (col. 10, lines 18-45 and fig. 3m).

Regarding claim 23, Barron teaches a process comprising: providing a semiconductor device (10, 300); accommodating a detached micro electromechanical (20) structure (MEMS) device upon the semiconductor device; providing a conveyance (24) over the semiconductor device and around the detached MEMS device (20); and contacting encapsulation material with at least one of the semiconductor device, the

Art Unit: 2811

detached MEMS device, and the conveyance to form an integrated MEMS package (col. 11, lines 46-53 and col. 10, lines 18-45 and fig. 3m).

Regarding claim 24, Barron teaches the entire claimed structure of claim 23 above including embedding a MEMS (38) device in the conveyance (24).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 18 and 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barron.

Regarding claims 18, Barron teaches substantially the entire claimed structure of claims 14, 16 and 17 above except explicitly stating providing a sealing structure; and disposing the sealing structure in a manner sufficient to isolate at least one of the at least one detached MEMS device.

Barron teaches forming a sealed cavity MEMS device (200) without stating that individual MEMS are being sealed (col. 11, lines 46-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a sealing structure as claimed in the process of Barron in order to provide good protection against moisture.

Regarding claims 25, Barron teaches substantially the entire claimed structure of claim 23 above except explicitly stating that providing a sealing structure; and

Art Unit: 2811

interposing the sealing structure upon the semiconductor device in a manner sufficient to isolate at least one of the at least one detached MEMS device.

Barron teaches forming a sealed cavity MEMS device (200) without stating that individual MEMS are being sealed (col. 11, lines 46-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a sealing structure as claimed in the process of Barron in order to provide good protection against moisture.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A Gebremariam whose telephone number is (571) 272-1653. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/623,965

Page 6

Art Unit: 2811

SAG

May 18, 2004

A handwritten signature in black ink, appearing to be 'Or Nadav'.

ORI NADAV

pat. examiner